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(71)Applicant : DAINIPPON PRINTING CO LTD
 (72)Inventor : YAMASHITA RIKIYA
 YAMAZAKI TAKUYA
 MATSUZAKI HIROSHI

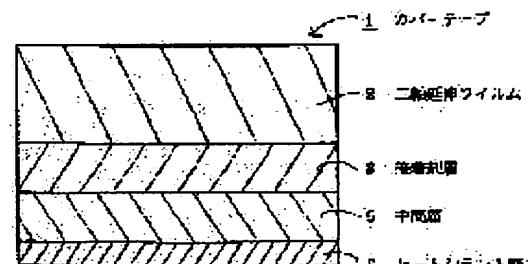
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(54) COVER TAPE

(57)Abstract:

PROBLEM TO BE SOLVED: To obtain a cover type little in the fluctuation of peeling strength (the difference between max. and min. peeling strengths), stable in release properties, and excellent in antistatic effects by a method wherein an adhesive layer, an intermediate layer, and a heat sealant layer containing conductive fine particles of tin oxide or the like or antistatic silicon organic compound are successively laminated on a biaxially oriented film.

SOLUTION: An adhesive layer 3, an intermediate layer 5, and a heat sealant layer 6 containing conductive fine particles of tin oxide series, zinc oxide series, and indium series or antarctic type silicon organic compound are successively laminated on a biaxially oriented film 2 to prepare a cover type 1. The adhesive layer uses polyester resin, urethane resin, various kinds of synthetic rubber, etc., as main components, and as resin of the intermediate layer, any one of homopolymer, copolymer, and polymer alloy can be used. In the heat sealant layer, conductive carbon particles, conductive fine particles of tin oxide, zinc oxide, indium oxide, etc., and silicon organic compound are contained. As the conductive fine particles those of $0.01\text{--}10 \times m$ average particle size of primary particle are preferable.



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CLAIMS**[Claim(s)]**

[Claim 1] The covering tape characterized by carrying out the laminating of the heat SHIRANTO layer in which this covering tape contains the conductive particle of a biaxially oriented film, an adhesives layer, the middle class and a tin oxide system, a zinc oxide system, and an indium oxide system, or an antistatic mold silicon organic compound to order in the covering tape which can be heat sealed on a carrier tape.

[Claim 2] the covering tape according to claim 1 on which the adhesives layer which paste said biaxially oriented film together use polyester , a polyether , urethane system resin , ethylene and vinyl acetate system resin , acrylic resin , epoxy resins , or these denaturation objects as a principal component , and harden using isocyanates or amines , and a mixed rate with the curing agent to the principal component 100 weight section be characterize by the thickness be 5-80 micrometers in the 1 - 100 weight section .

[Claim 3] The covering tape according to claim 1 to 2 whose thickness of the middle class the thickness of said biaxially oriented film is 12-50 micrometers, and is 10-100 micrometers.

[Claim 4] The covering tape according to claim 1 on which the initial impact resistance values by the loop-formation stiffness circuit tester method of said covering tape are 4-50g, and the stiffness reinforcement f (a unit is a gram) and relation with time amount t (a unit is a part) are characterized by being what satisfies $0 \leq a \leq 0.5$ and $4 \leq b \leq 50$ in the relational expression of $f = -at + b$ (a constant and t are a variable for a and b).

[Claim 5] The covering tape according to claim 1 characterized by the difference of the upper limit of the reinforcement when exfoliating and a lower limit being 30g or less after heat sealing said covering tape and carrier tape.

[Claim 6] Said middle class is a consistency 0.915 - 0.940 g/cm³. Ethylene and alpha olefine copolymer, A 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene butadiene block copolymer, The hydrogenation object of a 10 - 50 % of the weight of styrene, and 90 - 50 % of the weight [of butadienes] styrene butadiene block copolymer, And the covering tape according to claim 1 characterized by being formed with two or more sorts of resin which contains ethylene, an alpha olefin copolymer, and a styrene butadiene block copolymer at least among high impact polystyrene.

[Claim 7] Said middle class is monolayer structure and is a consistency 0.915 - 0.940 g/cm³. Ethylene and 30 - 70 % of the weight of alpha olefine copolymers, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene butadiene block copolymers 10 - 50 % of the weight of styrene, and the hydrogenation object 5 of a 90 - 50 % of the weight [of butadienes] styrene butadiene block copolymer - 30 weight sections, The covering tape according to claim 6 characterized by being formed with the resin constituent with which high impact polystyrene 5 - 50 weight sections are added.

[Claim 8] Said middle class is monolayer structure and is a consistency 0.915 - 0.940 g/cm³. Ethylene and 30 - 70 % of the weight of alpha olefine copolymers, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene butadiene block copolymers The covering tape according to claim 6 characterized by being formed with the resin constituent with which the hydrogenation object 5 of a 10 - 50 % of the weight of styrene and 90 - 50 % of the weight [of butadienes] styrene butadiene block copolymer - 30 weight sections are added.

[Claim 9] Said middle class is monolayer structure and is a consistency 0.915 - 0.940 g/cm³. Covering tape according to claim 6 characterized by be formed to the resin constituent 100 weight section which consists of ethylene and 30 - 70 % of the weight of alpha olefin copolymers, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene butadiene block

copolymers with the resin constituent with which 5 - 50 % of the weight of high impact polystyrene is added.

[Claim 10] Said interlayer consists of two-layer structure with the 2nd resin layer which touches the 1st resin layer and said heat SHIRANTO layer. Said 1st resin layer is a consistency 0.915 - 0.940 g/cm³. It is formed with ethylene and alpha olefine copolymer. Said 2nd resin layer is a consistency 0.915 - 0.940 g/cm³. Ethylene and 30 - 70 % of the weight of alpha olefine copolymers, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene butadiene block copolymers The covering tape according to claim 6 characterized by being what currently formed with the resin constituent with which the hydrogenation object 5 of a 10 - 50 % of the weight of styrene and 90 - 50 % of the weight [of butadienes] styrene butadiene block copolymer - 30 weight sections are added.

[Claim 11] Said interlayer consists of two-layer structure with the 2nd resin layer which touches the 1st resin layer and said heat SHIRANTO layer. Said 1st resin layer is a consistency 0.915 - 0.940 g/cm³. It is formed with ethylene and alpha olefine copolymer. Said 2nd resin layer is a consistency 0.915 - 0.940 g/cm³. Ethylene and 30 - 70 % of the weight of alpha olefine copolymers, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene butadiene block copolymers The covering tape according to claim 6 characterized by being what currently formed with the resin constituent with which high impact polystyrene 5 - 50 weight sections are added.

[Claim 12] Said interlayer consists of two-layer structure with the 2nd resin layer which touches the 1st resin layer and said heat SHIRANTO layer. Said 1st resin layer is a consistency 0.915 - 0.940 g/cm³. It is formed with ethylene and alpha olefine copolymer. Said 2nd resin layer is a consistency 0.915 - 0.940 g/cm³. Ethylene and 30 - 70 % of the weight of alpha olefine copolymers, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene butadiene block copolymers 10 - 50 % of the weight of styrene, and the hydrogenation object 5 of a 90 - 50 % of the weight [of butadienes] styrene butadiene block copolymer - 30 weight sections, The covering tape according to claim 6 characterized by being what currently formed with the resin constituent with which high impact polystyrene 5 - 50 weight sections are added.

[Claim 13] Said interlayer consists of a three-tiered structure with the 3rd resin layer which touches the 1st resin layer, the 2nd resin layer, and said heat SHIRANTO layer. Said 1st resin layer is a consistency 0.915 - 0.940 g/cm³. It is formed with ethylene and alpha olefine copolymer. Said 2nd resin layer is a consistency 0.915 - 0.940 g/cm³. Ethylene and 30 - 70 % of the weight of alpha olefine copolymers, It is formed with a 70 - 30 % of the weight [of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight / of butadienes / styrene butadiene block copolymers] resin constituent. Said 3rd resin layer is a consistency 0.915 - 0.940 g/cm³. Ethylene and 30 - 70 % of the weight of alpha olefine copolymers, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene butadiene block copolymers The covering tape according to claim 6 characterized by being what currently formed with the resin constituent with which the hydrogenation object 5 of a 10 - 50 % of the weight of styrene and 90 - 50 % of the weight [of butadienes] styrene butadiene block copolymer - 30 weight sections are added.

[Claim 14] Said interlayer consists of a three-tiered structure with the 3rd resin layer which touches the 1st resin layer, the 2nd resin layer, and said heat SHIRANTO layer. Said 1st resin layer is a consistency 0.915 - 0.940 g/cm³. It is formed with ethylene and alpha olefine copolymer. Said 2nd resin layer is a consistency 0.915 - 0.940 g/cm³. Ethylene and 30 - 70 % of the weight of alpha olefine copolymers, It is formed with a 70 - 30 % of the weight [of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight / of butadienes / styrene butadiene block copolymers] resin constituent. Said 3rd resin layer Ethylene and 30 - 70 % of the weight of alpha olefine copolymers of a consistency 0.915 - 0.940 g/cm³, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene butadiene block copolymers The covering tape according to claim 6 characterized by being what currently formed with the resin constituent with which high impact polystyrene 5 - 50 weight sections are added.

[Claim 15] Said interlayer consists of a three-tiered structure with the 3rd resin layer which touches the 1st resin layer, the 2nd resin layer, and said heat SHIRANTO layer. Said 1st resin layer is a consistency 0.915 - 0.940 g/cm³. It is formed with ethylene and alpha olefine copolymer. Said 2nd resin layer is a consistency 0.915 - 0.940 g/cm³. Ethylene and 30 - 70 % of the weight of alpha olefine copolymers, It is formed with a

70 - 30 % of the weight [of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight / of butadienes / styrene butadiene block copolymers] resin constituent. Said 3rd resin layer Ethylene and 30 - 70 % of the weight of alpha olefine copolymers of a consistency 0.915 - 0.940 g/cm³, As opposed to the 70 - 30 % of the weight [of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight / of butadienes / styrene butadiene block copolymers] resin constituent 100 weight section 10 - 50 % of the weight of styrene, and the hydrogenation object 5 of a 90 - 50 % of the weight [of butadienes] styrene butadiene block copolymer - 30 weight sections, The covering tape according to claim 6 characterized by being what currently formed with the resin constituent with which high impact polystyrene 5 - 50 weight sections are added.

[Claim 16] Said middle class is a consistency 0.915 - 0.940 g/cm³. Covering tape according to claim 6 characterized by being formed with the resin constituent which consists of ethylene and 30 - 70 % of the weight of alpha olefin copolymers, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene butadiene block copolymers.

[Claim 17] Said middle class is 3 the consistency of 0.915-0.940g/cm. Covering tape according to claim 6 characterized by being formed with the resin constituent which consists of 70 - 30 % of the weight of hydrogenation objects of ethylene and 30 - 70 % of the weight of alpha olefin copolymers, and a 10 - 50 % of the weight of styrene, and 90 - 50 % of the weight [of butadienes] styrene butadiene block copolymer.

[Claim 18] the line to which, as for said interlayer, glass-transition temperature exceeds 40 degrees C -- the covering tape according to claim 1 characterized by being formed with saturated polyester.

[Claim 19] Said heat sealant layer is polyester, polyurethane, a vinyl chloride and a vinyl acetate system copolymer, and a covering tape according to claim 1 to 15 characterized by including at least one sort of acrylic resin.

[Claim 20] Said heat SHIRANTO layer is a covering tape according to claim 1 to 16 which surface resistivity is in the range of 105-1012ohms / **, and is characterized by the charge damping time being 2 or less seconds 99%.

[Claim 21] The covering tape according to claim 1 to 19 characterized by for total light transmission being 75% or more, and a haze value being 50% or less.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Field of the Invention] This invention contains a semiconductor device in the pocket section of the crevice formed in the container made of synthetic resin which contains various industrial components, for example, a carrier tape, and about the covering tape of the carrier tape which covers and heat seals a stowage, when mounted in electronic parts, the opening exfoliation is easy for it, and it belongs to the covering tape whose peel strength was stable.

[0002]

[Problem(s) to be Solved by the Invention] Sheet forming, such as a polyvinyl chloride, polystyrene, polyester, a polycarbonate, and polypropylene, is usually easy for the material of the container made of synthetic resin which contains various industrial components, for example, a carrier tape. Moreover, the covering tape consists of a layered product which prepared the heat sealant layer in one field of a film. A carrier tape or a covering tape is static electricity generated when the electronic parts contained exfoliate contact on the pocket section of a carrier tape, or a covering tape, or a covering tape, and is required to have the transparency of extent which can view not only the generating prevention means of static electricity for not causing degradation of electronic parts and destruction but contents. Moreover, electronic parts vibrate according to exfoliation of lid material being easy in order to take out the electronic parts contained, and the variation in peel strength (this difference being indicated to be a zip rise the difference of the maximum of peel strength and the minimum value and henceforth.) being still larger during exfoliation actuation, or it is required that the elutriation from a carrier tape should be prevented. It offers a technical problem the covering tape excellent in the antistatic effectiveness while detachability of this invention with a small zip rise is stable.

[0003]

[Means for Solving the Problem] In order to solve the above-mentioned technical problem, in the covering tape which can be heat sealed on the carrier tape of this invention, it is the covering tape which compounded in order the heat SHIRANTO layer in which this covering tape contains the conductive particle of a biaxially oriented film, an adhesives layer, the middle class and a tin oxide system, a zinc oxide system, and an indium oxide system, or an antistatic mold silicon organic compound. And the adhesives layer which pastes said biaxially oriented film together uses polyester, a polyether, urethane system resin, ethylene and vinyl acetate system resin, acrylic resin, epoxy resins, or these denaturation objects as a principal component, and hardens using isocyanates or amines. The mixed rate (solid content ratio) of a curing agent to the principal component 100 weight section is the 1 - 100 weight section, and prepares the thickness in 5-80 micrometers. Moreover, the thickness of said biaxially oriented film is 12-50 micrometers, and the middle class's thickness is the covering tape which is 10-100 micrometers. And the initial impact resistance values by the loop-formation stiffness circuit tester method of said covering tape are 4-50g, and the stiffness reinforcement f (a unit is a gram) and relation with time amount t (a unit is a part) satisfy $0 \leq a \leq 0.5$ and $4 \leq b \leq 50$ in the relational expression of $f = at + b$ (for a and b, a constant and t are a variable). Furthermore, the zip rise when exfoliating is 30g or less after heat sealing said covering tape and carrier tape. Said interlayer Moreover, a consistency 0.915 - 0.940 g/cm³ (g/cm³ whose unit of a consistency is a unit omits hereafter.) Ethylene and alpha olefine copolymer (this specification is henceforth indicated to be an E-O copolymer.) A 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] styrene butadiene block copolymer (it is henceforth indicated as a S-B copolymer.) The hydrogenation object of a 10 - 50 % of the weight of styrene, and 90 - 50 % of the weight [of butadienes] styrene butadiene block copolymer (it is henceforth indicated as a S-B copolymer water garnish.) And it is formed with two or more

sorts of resin which contains an E-O copolymer and a S-B copolymer at least among high impact polystyrene (it is henceforth indicated as HIPS). Said interlayer is monolayer structure. 30 - 70 % of the weight of furthermore, E-O copolymers of consistencies 0.915-0.940, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers It is formed with the resin constituent with which 10 - 50 % of the weight of styrene, the 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish 5 - 30 weight sections, and HIPS5 - 50 weight sections are added. And said interlayer is monolayer structure and used to be formed to the resin constituent 100 weight section which consists of 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers with the resin constituent with which the 10 - 50 % of the weight of styrene and 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish 5 - 30 weight sections are added. Moreover, said interlayer is monolayer structure and used to be formed to the resin constituent 100 weight section which consists of 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers with the resin constituent with which 5 - 50 % of the weight of HIPS(s) is added. And said interlayer consists of two-layer structure with the 2nd resin layer which touches the 1st resin layer and said heat SHIRANTO layer. Said 1st resin layer is formed with the E-O copolymer of consistencies 0.915-0.940. Said 2nd resin layer 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers It is formed with the resin constituent with which the 10 - 50 % of the weight of styrene and 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish 5 - 30 weight sections are added. Moreover, said interlayer consists of two-layer structure with the 2nd resin layer which touches the 1st resin layer and said heat SHIRANTO layer. Said 1st resin layer is formed with the E-O copolymer of consistencies 0.915-0.940. Said 2nd resin layer 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, It is formed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers with the resin constituent with which HIPS5 - 50 weight sections are added. Moreover, said interlayer consists of two-layer structure with the 2nd resin layer which touches the 1st resin layer and said heat SHIRANTO layer. Said 1st resin layer is formed with the E-O copolymer of consistencies 0.915-0.940. Said 2nd resin layer 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers It is formed with the resin constituent with which 10 - 50 % of the weight of styrene, the 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish 5 - 30 weight sections, and HIPS5 - 50 weight sections are added. And said interlayer consists of a three-tiered structure with the 3rd resin layer which touches the 1st resin layer, the 2nd resin layer, and said heat SHIRANTO layer, said 1st resin layer is formed with the E-O copolymer of consistencies 0.915-0.940, and said 2nd resin layer is 30 - 70 % of the weight of E-O copolymers, and 50 - 90 % of the weight of styrene and BU of consistencies 0.915-0.940. It is formed with a 70 - 30 % of the weight [of 50 - 10 % of the weight / of TAJIEN / S-B copolymers] resin constituent. Said 3rd resin layer 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers It is formed with the resin constituent with which the 10 - 50 % of the weight of styrene and 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish 5 - 30 weight sections are added. Moreover, said interlayer consists of a three-tiered structure with the 3rd resin layer which touches the 1st resin layer, the 2nd resin layer, and said heat SHIRANTO layer. Said 1st resin layer is formed with the E-O copolymer of consistencies 0.915-0.940. Said 2nd resin layer 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, It is formed with a 70 - 30 % of the weight [of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight / of butadienes / S-B copolymers] resin constituent. Said 3rd resin layer 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, It is formed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers with the resin constituent with which HIPS5 - 50 weight sections are added. Moreover, said interlayer consists of a three-tiered structure with the 3rd resin layer which touches the 1st resin layer, the 2nd resin layer, and said heat SHIRANTO layer. Said 1st resin layer is formed with the E-O copolymer of consistencies 0.915-0.940. Said 2nd resin layer 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, It is formed with a 70 - 30 %

of the weight [of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight / of butadienes / S-B copolymers] resin constituent. Said 3rd resin layer 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, As opposed to the 70 - 30 % of the weight [of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight / of butadienes / S-B copolymer copolymers] resin constituent 100 weight section It is formed with the resin constituent with which 10 - 50 % of the weight of styrene, the 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish 5 - 30 weight sections, and HIPSS - 50 weight sections are added. Moreover, said middle class is formed with the resin constituent which consists of 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers. Moreover, said middle class is formed with the resin constituent which consists of 70 - 30 % of the weight of 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, and butadienes [10 - 50 % of the weight of styrene and 90 - 50 % of the weight of butadienes] S-B copolymer water garnishes. moreover, the line to which, as for said interlayer, glass-transition temperature exceeds 40 degrees C -- it is formed with saturated polyester. And said heat sealant layer contains at least one sort of polyester, polyurethane, a vinyl chloride and a vinyl acetate system copolymer, and acrylic resin. And said heat SHIRANTO layer has surface resistivity in the range of 105-1012ohms / **, and 99% charge damping time is a thing for 2 or less seconds. Furthermore, total light transmission is 75% or more, and a haze value is 50% or less of thing.

[0004]

[Description of the Prior Art] Conventionally, predetermined reinforcement is required by heat sealing with a covering tape and a carrier tape so that a covering tape may exfoliate during transportation and storage and there may be that no electronic parts drop [de] in it. However, when peel strength was too large and a covering tape was exfoliated at the mounting process of electronic parts, there was a problem that the accident on which a carrier tape vibrates and electronic parts jump out of the pocket of a carrier tape occurred. Therefore, when a covering tape is heat sealed by sufficient reinforcement for a carrier tape and electronic parts are mounted, it is required that the detachability should be good. Adjusting this peel strength on condition that heat-sealing temperature, time amount, a pressure, etc. had the problem of being very difficult. Moreover, even if it had suitable peel strength, when a zip rise was large, there was a problem that a carrier tape vibrated and the contained electronic parts jumped out.

[0005] And scouring a conductive carbon black particle and a metal particle on a carrier tape, or applying the coating liquid containing these to it as a generating prevention means of static electricity in the covering tape of a carrier tape, is performed. Moreover, scouring antistatic agents, such as a surface active agent, a conductive carbon black particle, and a metal particle in the heat sealant layer which contacts electronic parts and directly, or applying the coating liquid containing these to it as a means of the static electricity generating prevention in a covering tape, is performed.

[0006] Scouring conductive particles, such as a conductive carbon particle and a metallic oxide, and a metal particle, and it being crowded or applying to a carrier tape as a prevention means of static electricity generating of a carrier tape, is performed. Moreover, scouring antistatic agents, such as a surfactant, the conductive particle of a metallic-oxide system, and a metal particle, and it being crowded or applying to the heat sealant layer which contacts electronic parts and directly as a prevention means of static electricity generating of a carrier tape, is performed. As for what mixed especially in the heat sealant layer the particle which electric-conduction-ized the metallic oxide (tin oxide, zinc oxide), transparency was used comparatively well.

[0007] However, the conductive carbon black particle as an antistatic agent contained in an above-mentioned carrier tape and an above-mentioned covering tape and the metal particle reduced the transparency of a sheet, and had the problem of being hard to check the electronic parts contained from the outside. Moreover, when a surfactant was applied, the antistatic nature of a surfactant had a humidity dependency, does not have electrification brain prevention effectiveness sufficient in the ambient atmosphere of low humidity, and had the trouble of destroying electronic parts.

[0008]

[Embodiment of the Invention] The covering tape 1 of this invention carries out the laminating of the heat SHIRANTO layer 6 in which this covering tape 1 contains the conductive particle of a biaxially oriented film 2, the adhesives layer 3, the middle class 5 and a tin oxide system, and a zinc oxide system indium oxide system, or an antistatic mold silicon organic compound to order in a carrier tape and the covering tape 1 which can be heat sealed, as shown in drawing 1.

[0009] The biaxially oriented film of this invention is one 12-50-micrometer shaft or biaxially oriented film produced from thermoplastics, such as polyamides, such as polyolefines, such as polyester, such as

polyethylene terephthalate and polyethylenenaphthalate, and polypropylene, and nylon, and a polycarbonate. And bond strength with an adhesives layer is strengthened, and since it is stabilized, surface treatment, such as corona discharge treatment, plasma treatment, and sandblasting processing, can also be beforehand performed for the side which touches an adhesives layer if needed. Furthermore, a surfactant etc. can be scoured and lump electrification processing can also be performed.

[0010] And as for pasting with a biaxially oriented film and an interlayer, being formed through a hardening reactive adhesive layer is desirable. The adhesives layer of the 2 liquid reaction type of this invention or a heat-curing mold uses polyester system resin, polyether system resin, urethane system resin, urethane denaturation polyester system resin, urethane-ized polyether system resin, a vinyl system copolymer, ethylene and vinyl acetate system resin, ethylene and vinyl acetate acrylic resin, acrylic resin, aromatic series polyamine system resin, poly thiol system resin, ethylene acrylic resin, an epoxy resin, a polyamide, ionizing-radiation hardening mold resin, various synthetic rubber, etc. as a principal component.

[0011] Tolylene diisocyanate, 4,4'-diphenylmethane diisocyanate, hexamethylene di-isocyanate, isophorone diisocyanate, xylenediisocyanate, naphthylene-1,5-diisocyanate, a polyamine poly thiol, etc. are used for the above-mentioned adhesives as a curing agent. In a principal component, a curing agent is the 1 - 100 weight section to the 100 weight sections, hardening of adhesives runs short of curing agents below in 1 weight section, the mixed rate of adhesives runs short of the rigidity as the whole covering tape, and a zip rise becomes large. Moreover, at the time of the transportation after the bond strength of an oriented film and an interlayer will fall if a curing agent exceeds the 100 weight sections, and being filled up with the production process of a tape, and components, it is at the components wearing-time and a stretched tape may exfoliate.

[0012] Moreover, the constituent which mixed suitably the prepolymer which has a polymerization nature unsaturated bond or an epoxy group in a molecule, oligomer, and/or a monomer as ionizing-radiation hardening mold resin is used. For example, there are urethane acrylate, polyester acrylate, etc.

[0013] Spreading of an adhesives layer does not ask the approaches, such as gravure coating and roll coating. The thickness of the adhesives layer of a reaction hardening mold becomes the factor which gives rigidity to a covering tape, and is 5-20 micrometers preferably 3-80 micrometers (it indicates like solid content and the following). In 3 micrometers or less, bond strength may not be made to homogeneity, and it is strong, and not only the adhesives layer 80 micrometers or more is disadvantageous in respect of a price, but it may check heat-sealing nature or rigidity may produce a crack on a covering tape. Moreover, the heat-sealing nature in low temperature may be checked because an adhesives layer becomes thick.

[0014] The thermal resistance which prevents a covering tape's carrying out thermofusion with the heat-sealing bar which contacts when heat sealing a covering tape on a carrier tape according to a compound operation of a reaction hardening mold adhesives layer, or carrying out a heat shrink to a heat-resistant biaxially oriented film can be given. And the rigidity as a sheet becomes large according to an operation of the adhesives layer of a reaction type, and what an exfoliation include angle is stabilized and can make small the zip rise which is the range of the maximum when exfoliating and the minimum value can be conjectured.

[0015] although rigidity can be enlarged by making a biaxially oriented film thick to 50 micrometers or more, by becoming thick, the heating value which a heat sealant layer requires cannot be transmitted, but the temperature of a heat-sealing bar is set up highly -- required -- such -- **. Therefore, the carrier tape in which thermal resistance is inferior carries out deformation and a dimensional change, and it becomes the cause of changing the location when mounting electronic parts. Moreover, rigidity falls in an oriented film with a thickness of 12 micrometers or less, and a zip rise becomes large and is not desirable. It became clear that, as for a zip rise, a zip rise will become large with regards to the rigidity of a covering tape if the rigidity of a covering tape is small, and a zip rise would become small if rigidity is conversely large within fixed limits as a result of electronic parts' having jumped out of the carrier tape when a zip rise was large even if the peel strength of a covering tape was proper, and there being a problem that it is stabilized at high speed and cannot equip and studying components wholeheartedly.

[0016] If needed, using conductive particles, such as a surface active agent, a silicon organic compound, conductive carbon black, metal vacuum evaporationo, and a metallic oxide, etc., antistatic treatment can be performed, the field opposite to a heat sealant layer, i.e., outermost side, of a biaxially oriented film, and generating of static electricity by contact to antisticking, such as dust and Chile, or other fields can be prevented on the front face of the base material sheet 2 in it.

[0017] The rigidity of this invention set to $t=0$ the time of pushing in the sample set as a width of 15mm, and loop-formation die length of 62mm in the membrane formation direction using the loop-formation stiffness circuit tester (Product made from an Oriental energy machine) 5mm, measured the stiffness

reinforcement f the following 3, 5, and 10 and as of 30 minutes, and made the maximum stiffness reinforcement in the meantime the initial impact resistance value. and t ($3 \leq t \leq 30$) -- and -- and regression line $f = -at + b$ was calculated with the least square method from f, and a and b of this invention were computed. It has too strong rigidity that an initial impact resistance value is larger than 50g, it is large, in 4g or less, the nonuniformity of heat sealing influences peel strength and a zip rise is presumed to become large. [of a zip rise] That a is large means that fluctuation of f is large, a zip rise becomes large, and fluctuation of f means a small thing and the small thing of a is that of a ***** good better potato infinite 0. It is in the inclination for an initial impact resistance value to be also large that b is larger than 50g, rigidity is too strong and a zip rise becomes large. Conversely, by less than 4g, an initial impact resistance value also has b in a small inclination, the nonuniformity of heat sealing influences peel strength directly, and a zip rise becomes large.

[0018] The middle class of this invention does so an operation of the cushion which sticks both sheets to homogeneity, when a covering tape is heat sealed with a carrier tape. The bond strength of an interlayer 5 and the heat sealant layer 6 is controlled to be able to carry out interlaminar peeling to coincidence between an interlayer 5 and the heat sealant layer 6, as the covering tape heat sealed is shown in drawing 5 and drawing 6, when exfoliating from a carrier tape. Any of monolayer structure and multilayer structure are satisfactory for an interlayer 5, and he can form by combining two or more sorts of thermoplastics. Moreover, it can create by the monolayer or the multilayer by the usual film production approach by the inflation method by the circular dice, and the cast method by T dice.

[0019] Although anything of a homopolymer, a copolymer, and a polymer alloy can be used, the resin used for an interlayer can be selected from a thing with an operation of cushion effect, when heat sealing a carrier tape and a covering tape, while it regulates bond strength (peel strength) with a heat sealant layer. For example, it can form by the polymer alloy which becomes with polyester, polyethylene, an ethylene-vinylacetate copolymer, an ethylene acrylic-acid copolymer, an ethylene acrylic ester copolymer, an ionomer, ethylene propylene rubber, and two or more sorts of resin that contains the polyethylene and the S-B copolymer other than polypropylene at least among polyethylene, a S-B copolymer, a S-B copolymer water garnish, and HIPS. Hereafter, a desirable interlayer's configuration is shown especially.

[0020] The interlayer of monolayer structure is indicated. The middle class can form with three or more sorts of resin which contains an E-O copolymer and a S-B copolymer at least among the E-O copolymer of consistencies 0.915-0.940, a 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymer, a 10 - 50 % of the weight of styrene, and 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish, and HIPS. The E-O copolymers used for the middle class's formation are ethylene and a copolymer with a butene, a pentene, a hexene, a heptene, octene, 4 methyl pentene 1, etc. When the consistency of such an E-O copolymer exceeds less than 0.915 and 0.940, the film production nature of the interlayer by combination with a S-B copolymer falls and is not desirable.

[0021] Moreover, if the amount of the styrene which constitutes the S-B copolymer which forms the middle class is less than 50 % of the weight, the adhesiveness of a film will increase and it will be hard coming to deal with it, and when it exceeds 90 % of the weight, bond strength with the heat sealant layer in low temperature may fall.

[0022] The mixing ratio of an interlayer's E-O copolymer and a S-B copolymer influences greatly the peel strength when exfoliating, after heat sealing on a carrier tape, and the transparency of a covering tape. 70 - 30 % of the weight has [the mixing ratio of an E-O copolymer and a S-B copolymer] 30 - 70 % of the weight of E-O copolymers, and a desirable S-B copolymer. [in / at this invention / an interlayer] When a S-B copolymer exceeds [an E-O copolymer] 70 % of the weight less than 30% of the weight, transparency will fall not only an interlayer's film production nature falls, but, and the bond strength of an interlayer and a heat sealant layer will become large, the peel strength of a covering tape will exceed a fitness value, and it is not desirable. On the other hand, an E-O copolymer exceeds 70 % of the weight, and when a S-B copolymer is less than 30 % of the weight, the bond strength of the middle class and a heat sealant layer is small, and is not less [peel strength / fitness / as a covering tape], and desirable.

[0023] When using a S-B copolymer water garnish and HIPS for an interlayer and fabricating with four sorts of resin, it is desirable to carry out 5-50 weight section addition of 5 - 30 weight section and the HIPS for a 10 - 50 % of the weight of styrene and 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish to the resin constituent 100 weight section which consists of the 30 - 70 % of the weight of the above E-O copolymers and 70 - 30 % of the weight of S-B copolymers.

[0024] If the addition of a S-B copolymer water garnish exceeds 30 weight sections, the middle class obtained is not easy [blocking] and desirable. When it is not actually the hydrogenation object which was

added as a S-B copolymer water garnish, since the butadiene component is high, this copolymer becomes easy to generate the gel object which carried out the polymerization at the time of an interlayer's formation that it is easy to oxidize. Moreover, when it replaces with a S-B copolymer water garnish and a nonaqueous additive is used, it may become it is bad and impossible producing a film film production precision. [0025] An interlayer's transparency gets worse and is not desirable if the addition of HIPS exceeds 50 weight sections.

[0026] The above-mentioned interlayer may form to the resin constituent 100 weight section which consists of 30 - 70 % of the weight of E-O copolymers, and 70 - 30 % of the weight of S-B copolymers with the resin constituent containing three sorts of resin which added only the S-B copolymer water garnish of under 30 weight sections. Moreover, it may be formed to the resin constituent 100 weight section which consists of 30 - 70 % of the weight of E-O copolymers, and 70 - 30 % of the weight of S-B copolymers from the resin constituent which adds 5 - 50 weight section only for HIPS of under 50 weight sections, and contains three sorts of resin.

[0027] The interlayer of the monolayer structure of this invention can form besides the above-mentioned configuration from the resin constituent which consists of 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers. In this case, if the adhesiveness of a film increases that the amount of styrene which constitutes the S-B copolymer to be used is less than 50 % of the weight, and it is hard coming to deal with it and it exceeds 90 % of the weight, the heat-sealing reinforcement (peel strength of a carrier tape) of the heat sealant layer in low temperature will fall, and it is not desirable. And the mixing ratio of the E-O copolymer and S-B copolymer in the middle class influences greatly the peel strength and transparency when exfoliating, after heat sealing a carrier tape and a covering tape. When a S-B copolymer exceeds [an E-O copolymer] 70 % of the weight less than 30% of the weight, the middle class's film production nature and transparency will fall, and a covering tape will also spoil transparency. Moreover, the bond strength of the middle class and a heat sealant layer is also too large, and the peel strength of a covering tape will exceed a fitness value, and it is not desirable. On the other hand, an E-O copolymer exceeds 70 % of the weight, and when a S-B copolymer is less than 30 % of the weight, the bond strength of the middle class and a heat sealant layer is small, and it is not [the peel strength of a covering tape will be less than a fitness value, and] desirable.

[0028] The middle class of the monolayer structure of this invention can consist of resin constituents which consist of 90 - 10 % of the weight of 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, and butadienes [70 - 30 % of the weight of styrene and 90 - 50 % of the weight of butadienes] S-B copolymer water garnishes.

[0029] In this case, when the consistency of an E-O copolymer exceeds less than 0.915 and 0.940, the film production nature of the interlayer by combination with a S-B copolymer water garnish will fall, and it is not desirable. Moreover, if the adhesiveness of a film increases that the amount of styrene which constitutes the S-B copolymer water garnish to be used is less than 10 % of the weight, and it is easy to generate blocking and it exceeds 50 % of the weight, adhesion with a heat SHIRANTO layer will worsen, and peel strength falls and is not desirable. A hydrogenation object has good compatibility with an E-O copolymer, and flexibility and transparency are given to an interlayer. And the mixing ratio of the middle class's E-O copolymer and a S-B copolymer water garnish influences greatly the peel strength after heat sealing a carrier tape and a covering tape, and the middle class's transparency. That is, when a S-B copolymer water garnish exceeds [an E-O copolymer] 70 % of the weight less than 30% of the weight, an interlayer's film production nature worsens and transparency also falls. On the other hand, an E-O copolymer exceeds 70 % of the weight, and when a S-B copolymer water garnish is less than 30 % of the weight, the bond strength of the middle class and a heat sealant layer is weak, and it is not less [of a covering tape] than a fitness value, and desirable.

[0030] the interlayer of this invention -- glass-transition temperature -- a line 40 degrees C or more -- it can also form with saturated polyester. glass-transition temperature -- a line 40 degrees C or more -- as saturated polyester, it is polyester by aromatic series dicarboxylic acid, such as aliphatic series dicarboxylic acid and terephthalic acids, such as alcoholic components, such as ethylene glycol, propylene glycol, 1,4-butanediol, 1, and 4 cyclohexane dimethanol, and an adipic acid, a sebacic acid, isophthalic acid, and a diphenyl carboxylic acid, etc., for example. Specifically, a copolycondensation polymer with ethylene glycol, a terephthalic acid and ethylene glycol, isophthalic acid and a terephthalic acid, 1, and 4 cyclohexane dimethanol and ethylene glycol, a terephthalic acid and propylene glycol, a terephthalic acid, isophthalic acid, etc. is used. Moreover, having set glass-transition temperature as 40 degrees C or more originates in

the environmental condition which uses a covering tape not resulting in 40 degrees C.

[0031] The interlayer of the above-mentioned monolayer structure has the desirable thickness of 10-100 micrometers. It becomes the factor by which spoils cushion effect in case film production nature is not only bad, but heat seals by generating a fish eye and a pinhole when thickness is less than 10 micrometers, and the peel strength of a covering tape is not stabilized, and a zip rise is not stabilized.

[0032] The middle class 5 of this invention can consider as multilayer structure, and drawing 2 is the schematic diagram showing the cross section of the covering tape 1 of two-layer structure, and constitutes the middle class 5 from a 1st resin layer 51 and a 2nd resin layer 52.

[0033] A consistency with easy film production uses the 1st resin layer 51 as the E-O copolymer of 0.915-0.940. In this case, the 2nd resin layer 52 As opposed to the resin constituent 100 weight section which a consistency becomes from 30 - 70 % of the weight of E-O copolymers of 0.915-0.940, and 70 - 30% of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers It can form from the resin constituent with which the 10 - 50 % of the weight of styrene and 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish 5 - 30 weight sections are added. Furthermore, the 2nd resin layer 52 can be formed with the resin constituent which has added HIPS of 5 - 50 weight section to the resin constituent 100 weight section which consists of 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers. Moreover, the 2nd resin layer 52 can form a 10 - 50 % of the weight of styrene, and 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish to the resin constituent 100 weight section which consists of 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers with the resin constituent which added 3 - 30 weight section, and HIPS5 - 50 weight sections.

[0034] And the 1st resin layer and the 2nd resin layer can be formed by the thickness of 5-60 micrometers, respectively.

[0035] the schematic diagram of a cross section showing the example of the covering tape of this invention on which drawing 3 made the middle class 5 the three-tiered structure -- it is -- the middle class 5 -- the 1st resin layer 51, the 2nd resin layer 52, and the 3rd resin layer 53 -- ** -- a laminating is carried out to order and the 3rd resin layer 53 constitutes in contact with the heat sealant layer 6.

[0036] The 1st resin layer 51 consists of E-O copolymers of the consistencies 0.915-0.940 with easy film production. In this case, the 2nd resin layer 52 They are the constituent which becomes with 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers, and a presentation which is different in the 3rd resin layer 53. 30 - 70 % of the weight of and E-O copolymers of consistencies 0.915-0.940, As opposed to the resin constituent 100 weight section which consists of 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers The constituent which added the S-B copolymer water garnish 5 which consists of 10 - 50 % of the weight of styrene and 90 - 50 % of the weight of butadienes - 30 weight sections, and HIPS5 - 50 weight sections can constitute.

[0037] The 3rd resin layer 53 can be formed from the resin constituent with which the 10 - 50 % of the weight of styrene and 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish 5 - 30 weight sections are added to the resin constituent 100 weight section which a consistency becomes from 30 - 70 % of the weight of E-O copolymers of 0.915-0.940, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers. Moreover, the 3rd resin layer 53 can be formed to the resin constituent 100 weight section which consists of 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers with the resin constituent with which HIPS5 - 50 weight sections are added. Furthermore, it can also form to the resin constituent 100 weight section which consists of 30 - 70 % of the weight of E-O copolymers of consistencies 0.915-0.940, and 70 - 30 % of the weight of 50 - 90 % of the weight of styrene, and 50 - 10 % of the weight [of butadienes] S-B copolymers with the resin constituent with which 10 - 50 % of the weight of styrene, the 90 - 50 % of the weight [of butadienes] S-B copolymer water garnish 5 - 30 weight sections, and HIPS5 - 50 weight sections are added. And the 1st resin layer 51, the 2nd resin layer 52, and the 3rd resin layer 53 can be constituted from thickness of 3-30 micrometers, respectively, and a film can be produced independently, and it can paste together or co-extrusion shaping can be carried out, or any one sort of films can be coated with each film, and they can also form it.

[0038] The heat sealant layer of the covering tape of this invention is formed of polyester, polyurethane, a vinyl chloride and a vinyl acetate system copolymer, the thermoplastics that consists of at least one sort of acrylic resin, the conductive particle mentioned later. As an example of combination of two or more sorts of thermoplastics, the mixed varnish (a mixing ratio is 9:1-4:6) of polyurethane, and a vinyl chloride and a vinyl acetate system copolymer, the mixed varnish (a mixing ratio is 5:5 to 9.5:0.5) of polyester, and a vinyl chloride and a vinyl acetate system copolymer, the mixed varnish (a mixing ratio is 5:5 to 9.5:0.5) of acrylic resin, and a vinyl chloride and a vinyl acetate system copolymer, etc. can be mentioned. in addition, the line whose glass transition point of an interlayer is less than 40 degrees C -- as for the heat sealant layer in the case of being formed from saturated polyester, it is desirable to use the mixed varnish of polyurethane, and a vinyl chloride and a vinyl acetate system copolymer.

[0039] A heat sealant layer can include the conductive particle and silicon organic compound which gave conductivity to sulfides, such as metallic oxides, such as a conductive carbon particle, tin oxide, a zinc oxide, indium oxide, or titanium oxide, and a barium sulfate or zinc sulfide, copper sulfide, a cadmium sulfide, a nickel sulfide, sulfuration palladium. Such a conductive particle has that desirable whose mean particle diameter of a primary particle is 0.01-10 micrometers. In this case, as for the mixing ratio of the thermoplastics of a heat sealant layer, and a conductive particle, it is desirable that it is the range of 10:1-100. It causes a fall and adhesion inhibition of transparency and is not desirable, if the effectiveness which mixed the conductive particle as the ratio of a conductive particle is under the above-mentioned numeric value cannot be acquired and the above-mentioned range is exceeded.

[0040] That surface resistivity of the above-mentioned heat sealant layer is 105-1012ohms / ** in 22 degrees C and 40% (surface resistivity indicates below the numeric value measured on this condition) of relative humidity. Moreover, in 23**5 degrees C and 12**3% of relative humidity, the time amount (the charge damping time indicates below the numeric value measured on this condition) taken to decrease 99% from 5000V has the outstanding static electricity property of 2 or less seconds. If the above-mentioned surface resistivity exceeds 1012ohms / **, the static electricity spreading effect will get extremely bad, and it will become difficult to protect electronic parts from the static electricity destruction. Moreover, 105 When it comes to under omega/**, it may energize from the exterior to electronic parts through a covering tape, and there is risk of electronic parts being destroyed electrically. On the other hand, when the charge damping time which is the standard of the diffusion rate of the charge generated with static electricity exceeds 2 seconds, it becomes difficult for the static electricity spreading effect to get extremely bad, and to protect electronic parts from the static electricity destruction. In addition, above-mentioned surface resistivity and the above-mentioned charge damping time were measured based on MIL-B-81705C which is U.S. Military Standard. Moreover, a distributed stabilizer, a BUROKINGU inhibitor, etc. can also be included in a heat sealant layer if needed.

[0041] By preparing an interlayer 5 the heat sealant layer 6, when exfoliating the covering tape 1 heat sealed by the carrier tape 11, the covering tape 1 is the exfoliation gestalt of the desirable form produced between the layers of an interlayer 5 and the heat sealant layer 6, as shown in drawing 6. That is, the covering tape 1 which formed the heat-sealing section 10 in the carrier tape 11 shown in the perspective view of drawing 4 R> 4 and the sectional view of drawing 5 is a desirable gestalt with few [carrying out interlaminar peeling between the middle class 5 and the heat sealant layer 6, as shown in drawing 6] zip rises, when exfoliating. In addition, in the condition of having exfoliated, the exfoliation gestalt between an interlayer 5 and the heat sealant layer 6 was made into interlaminar peeling this time. As for it, judging that it exfoliated in the cohesive failure of an interlayer 5 or the heat sealant layer 6 when it was judged as interlaminar peeling this time, if an interlayer 5 and the heat sealant layer 6 do not pass for a foreign element to have not been checked, respectively but can check the compound and molecule of ultralow volume by development of tools of analysis after exfoliation from now on is also only considered. However, the case where the foreign element beyond the usual analytical limit did not remain was made into interlaminar peeling for convenience this time.

[0042] If the peel strength of a carrier tape and a covering tape becomes under 10g/1mm width, in case the carrier tape after heat sealing a covering tape will be transported, it exfoliates in the interface of the carrier tape 11 and the heat sealant layer 6, and there is a danger that contents will drop out. Moreover, when peel strength exceeds 80g/1mm width, in case a covering tape is exfoliated, there is a possibility that the carrier tape 11 may vibrate and contents may jump out. Moreover, a zip rise has desirable 30g or less. It is [a possibility that a carrier tape may vibrate that a zip rise is 30g or more at the time of exfoliation of a covering tape, and contents may jump out] and is not desirable. Moreover, it is because the carrier tape when exfoliating runs that a zip rise approaches zero infinite smoothly and it is possible that it is not that in

which a lower limit exists at a zip rise. [of improvement in the speed of a restoration machine] [0043] Peel strength is the value of 300mm [in exfoliation rate] part 180-degree exfoliation for /under the ambient atmosphere of 40% of 23-degree-C relative humidity. Moreover, it may be able to be suitably chosen by control of heat-sealing conditions whether interlaminar peeling is made to start depending on a property with the above-mentioned interlayer and a heat sealant layer and a class or the cohesive failure in a heat sealant layer is made to cause. That is, it is high in the temperature at the time of heat sealing, and is long in heating time, and interlaminar peeling can be carried out between an interlayer and a heat sealant layer by strengthening a pressure and carrying out full weld of a carrier tape and the covering tape. On the contrary, interfacial peeling between a heat sealant layer and a carrier tape if a carrier tape and a covering tape are stopped in the imperfect welding condition by making low temperature at the time of heat sealing, shortening heating time, or weakening a pressure (in this specification, the exfoliation which takes place between a heat sealant layer and a carrier tape is meant, and interlaminar peeling which happens between an interlayer and a heat sealant layer is distinguished from a vocabulary side.) Although it being the same as that of the following and the zip rise of 30g or less can be attained, as a routing, heat-sealing conditions are limited extremely and it is unstable.

[0044] As mentioned above, interlaminar peeling between an interlayer and a heat sealant layer can be attained by fully performing heating and pressurization. For example, they are 0.3 - 2.0 seconds, and pressurization about 130-200 degrees C and heating time in whenever [stoving temperature] 0.7 - 3.0 kgf/cm² It is extent. The peel strength between the layers by 180-degree exfoliation is weaker than the peel strength of a heat sealant layer and a carrier tape, therefore interlaminar peeling between an interlayer and a heat sealant layer can be attained by fully heating.

[0045] Since the covering tape of this invention exfoliates between an interlayer and a heat sealant layer, it does not change with heat-sealing conditions a lot. Therefore, heat sealing with a covering tape and a carrier tape can fully be heated, and can be performed, and stable heat sealing and peel strength can be obtained.

[0046] The quality of the materials of the carrier tape set as the use object of the covering tape of this invention are a polyvinyl chloride, polystyrene, polyester (A-PET, PEN, PET-G), polypropylene, a polycarbonate, a polyacrylonitrile, ABS, etc. And there are some which scour the conductive particle, silicon organic compound, or surfactant which gave these the conductive carbon black particle and the metal particle, and gave conductivity to the metallic oxide as an antistatic cure, or apply the thing containing these. Moreover, the thing in which the conductive polymer was formed is mentioned to the front face of the multilayer sheet which carried out the laminating of the polystyrene system or ABS system resin which contains carbon black to one side or both sides of a polystyrene system or an ABS system resin sheet to one by the co-extrusion, and a sheet plastic. Or the thing in which the conductive polymer was made to form on the surface of a sheet plastic can also be mentioned as conductive processing.

[0047] Next, a concrete example is shown and the covering tape of this invention is further explained to a detail.

[0048] As shown in Table 1 and 3, Dacron film F type [trade name by Teijin, Ltd.] thickness as a biaxially oriented film 2 6, 12, 16, 25, 50, and 75 micrometers, (Example 1 of an experiment) Ethylene and alpha olefine copolymer [trade name by ULTZEX 3550 Mitsui Petrochemical Industries, Ltd.] 40 % of the weight and styrene butadiene block-copolymer [Asa FREX 810 [trade name by Asahi Chemical Industry Co., Ltd.] 60 % of the weight are blended. It created by the usual tubular film process. Subsequently, the adhesives of the component which shows thickness 8, 10, 30, 50, and 90 and the 120-micrometer interlayer 5 in Table 1 and 3 were constituted, and it compounded by the dry lamination.

- Adhesives component principal component : a polyurethane system, a polyester system, a polyether system, a polyurethane denaturation polyester system, an urethane-ized polyether system, a denaturation ether polyester system, a vinyl copolymer system, ethylene and a vinyl acetate system, a vinyl acetate system, acrylic, the acrylic copolymer resin, an epoxy resin.

Curing agent: An isocyanate system, an amine system.

Subsequently, by gravure reverse, it dissolved in the solvent, the following [constituent 1 for heat sealant layers] was applied to the above-mentioned middle class 5, and the heat sealant layer 6 was formed by the thickness of 2 micrometers (solid content).

Constituent 1for [heat sealant layers]

- Polyurethane NIPPORAN 5120 The 20.0 weight sections " trade name by Japan polyurethane industrial incorporated company"

- A vinyl chloride and vinyl acetate system copolymer Vinylite VAGH The 4.0 weight sections "Union Carbide trade name"

- Conductive particle T-1 *1 " trade name by MITSUBISHI MATERIALS CORP."

*1: Add the conductive particle T-1 to the above-mentioned mixed resin by the component ratio indicated to Table 2 and 4.

[0049] About each covering tape (they are the comparison samples 1-10 to a sample 1 - 29 lists) of the above-mentioned example 1 of an experiment, the stiffness reinforcement measured on the following conditions, an initial impact resistance value, and the numeric values a and b of this invention computed using the least square method based on the $f = at + b$ type from t and f in the list are shown in Table 1 and 3. Measuring instrument: Loop-formation stiffness circuit tester " trade name by Oriental energy machine incorporated company"

Measuring condition: Sample configuration 15x110mm (however, 15mm, cross direction)

The die length of a loop formation 62mm The amount of pushing The time of pushing in the sample set as 5mm loop-formation die length of 62mm 5mm was set to t= 0, the stiffness reinforcement f was measured the following 3, 5, and 10 and as of 30 minutes, and the maximum stiffness reinforcement in the meantime was made into the initial impact resistance value.

[0050] It heat sealed on condition that the following with the sheet XEG47 of a carrier tape " trade name by peace chemistry incorporated company" about each covering tape (they are the comparison samples 1-9 to a sample 1 - 29 lists) of the example 1 of an experiment.

- Peel strength [the extraction approach of a sample]

seal condition **: -- let [for the temperature of 150 degrees C, the 2.0 kgf/cm pressure 2, and time amount 0.5 seconds] 25 shots (200mm) be a sample after seal head:width 0.5mmx2, die length of 16mm, delivery die length of 8mm, and extraction sample:50-shot (400mm) extraction for the seal condition **:temperature of 120 degrees C, the 2.5 kgf/cm pressure 2, and time amount 0.5 seconds.

tension universal testing machine HTH- peel strength is measured for exfoliation and an exfoliation rate by 300 mm/min 180 degrees using 100 "an Oriental Baldwin, Inc. trade name." The difference of the maximum of peel strength and the minimum value which measured die length of 200mm about each sample was considered as the zip rise. The result of the example of a comparison is shown for the peel strength of the example by each heat-sealing condition, a zip rise, and an exfoliation gestalt in Table 2 in Table 4 again.

[0051]

[Table 1]

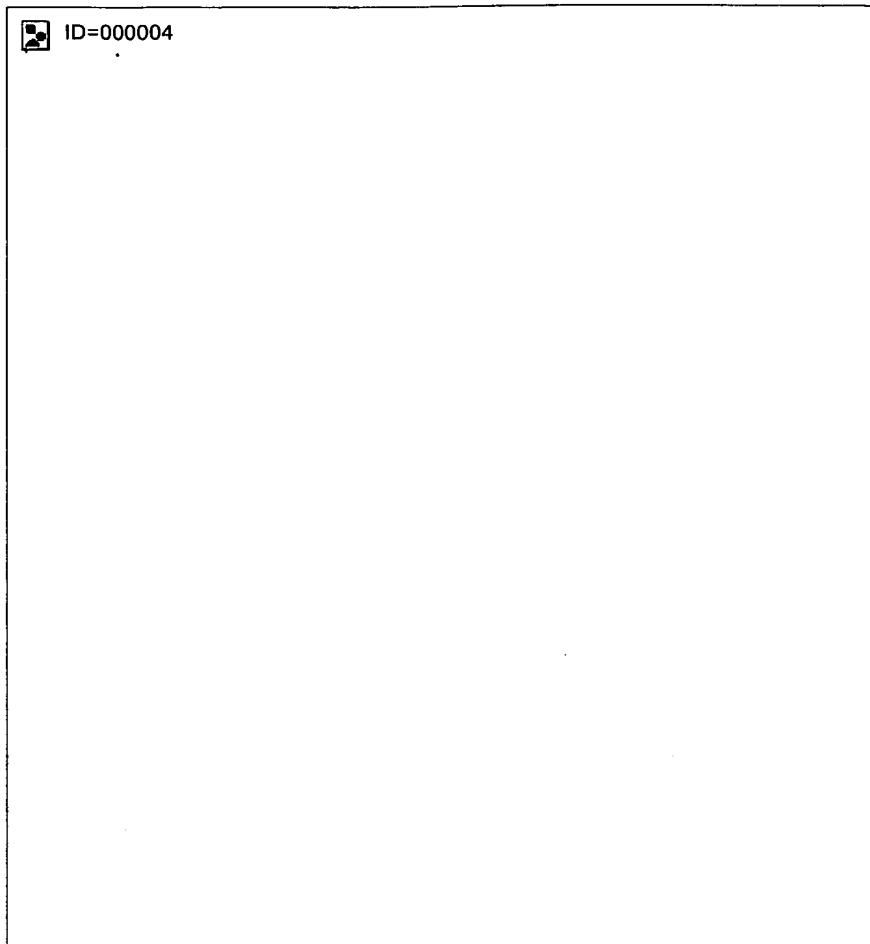
表1 実験例1における実施例の構成、導電性及びステイフネス

実験試 例料 番号	延伸 フィルムの 厚さ μm	中間層 の 厚さ μm	接 着 剤			ステイフネス法による 値		
			主成分	硬化剤	主成分/ 硬化剤	厚さ μm	a 10^{-3} g/min	b g
								初期 衝撃値 g
1	1.6	3.0	PU	イソシ タ	100/25	8	5.4	8.2
2	々	々	PEs	タ	100/1	5.0	5.5	6.0
3	々	々	PEt	タ	100/50	5.8	17.0	20.0
4	々	々	uPEs	タ	100/100	4.9	20.0	28.0
5	々	々	uPBt	タ	100/25	4.9	8.0	8.5
6	々	々	ePEs	タ		5.9	7.2	7.5
7	々	々	VCo	タ		7.5	7.1	8.0
8	々	々	VAc	タ		6.0	5.5	6.0
9	々	々	BVAc	タ		6.2	5.2	48.0
10	々	々	Ac	タ		5.1	6.5	7.0
11	々	々	ACo	タ		5.7	7.0	7.2
12	々	々	Epo	アミン		8.2	6.0	6.5
13	々	々	PU	イソシ タ		10.0	5.0	6.5
14	々	々				21.0	6.2	7.5
15	々	々				7.6	5.0	6.5
16	1.2	々				2.3	4.7	5.5
17	2.5	々				33.0	22.0	24.0
18	5.0	々				42.0	37.0	41.0
19	1.6	1.0				1.1	4.0.0	4.3
20	々	5.0				9.0	1.0.0	11.0
21	々	9.0				4.5	2.5.0	30.0
22	々	3.0				5	1.8	4.2
23	々	々				2.0	4.3	12.0
24	々	々				5.0	1.1.0	15.0
25	々	々				8.0	2.1.0	14.0
26	々	々				8	5.3	15.0
27	々	々				々	5.1	19.0
28	々	々				々	5.8	8.4
29	々	々				々	6.0	10.0
							8.1	9.0
							8.9	8.0

但し、

PU : ポリウレタン系、 PE s : ポリエステル系、
 PE t : ポリエーテル系、 uPBs : ポリウレタン変性ポリエステル系、
 uPBt : ウレタン化ポリエーテル系、 ePEs : 変性エーテルポリエステル系、
 VCo : ビニル共重合体系、 VAc : 酢酸ビニル系、
 BVAc : エチレン酢酸ビニル系、 Ac : アクリル系、
 ACo : アクリル系共重合体、 Epo : エポキシ樹脂、
 イソシ : イソシアネート系硬化剤、 アミン : アミン系硬化剤、

[0052]
[Table 2]



[0053]

[Table 3]

表3 実験例1における比較試料の導電特性とステイフネス

比 較 試 料 番 号	延 伸 フ ィ ル ム の 厚 さ μm	中 間 層 の 厚 さ μm	接 着 剤				ステイフネス法による 関 数		
			主成分	硬化剤	主成分/ 硬化剤	厚 さ μm	a 10 ⁻³ g/mi	b g	初期 衝撃値 g
1	1 6	3 0	PU	イソシ	100/120	8	6 2	3.2	5.0
2	々	々	々	々	100/0.1	々	5 3	5.2	6.2
3	々	々	々	々	100/25	2	2 1	3.5	4.5
4	々	々	々	々		110	2 1 0	1 9.0	2 5.0
5	7 5	々	々	々		8	6 1 0	4 1.0	6 3.0
6	1 6	8	々	々			7 1	3.2	4.5
7	々	1 2 0	々	々		々	2 2 0	3 5.0	3 9.0
8	々	3 0	々	々		々	5 2	8.0	8.5
9	々	々	々	々		々	5 2	8.0	8.5
10	6	々	々	々		々	5 4	3.0	3.5

[0054]

[Table 4]

表4 実験例1における比較試料のヒートシール特性

実験 例 番 号	ヒート シーラント層の 成分比 熱可塑性樹脂 ／導電性微粒子	ヒートシール条件 ①			ヒートシール条件 ②		
		ジップ アップ g	剥離強度 1mm巾 g	剥離形態	ジップ アップ g	剥離強度 1mm巾 g	剥離形態
1	4 / 6	3.6	4.0	層間剥離	3	5	界面剥離 凝聚剥離
2	々	3.1	4.1	々	3.1	3.3	々
3	々	3.7	4.1	々	3.8	3.3	界面剥離 凝聚剥離
4	々	3.9	4.4	々	3	7	界面剥離 凝聚剥離
5	々	4.2	3.8	凝聚剥離	3.7	3.0	界面剥離 凝聚剥離
6	々	3.5	4.2	層間剥離	4.1	3.1	々
7	々	5.3	2.6	凝聚剥離	4	9	界面剥離 凝聚剥離
8	1 / 1 / 1	8	4.4	層間剥離	1.3	3.2	々
9	1 1 / 1	8	4.4	々	1.3	3.2	々
10	4 / 6	4.5	4.2	々	3.7	3.0	々

- 実施例の試料1～29は、ジップアップが3.0 g以下と小さく、かつ、剥離強度も安定していた。
- 比較例1、4、5、7及び8は、いずれも低温ヒートシール性が悪かった。
- 比較例1、2、3、4、5、6、7及び10は、いずれもジップアップが大きかった。

[0055] (Example 2 of an experiment) As shown in drawing 1, the adhesives layer 3 which consists of bamboo NETO A-50 [trade name by Takeda Chemical Industries, Ltd.] as a biaxially oriented film 2 with a thickness of 12 micrometers considering [trade name by biaxial-stretching polyester film:S pet 6140 Toyobo Co., Ltd.] and the interlayer 5 of a configuration of being shown in the following table 5 as the bamboo rack A515 and a curing agent was formed, and it compounded by the dry lamination. On the other hand, it used by the presentation which shows the following as an interlayer's component in Table 5, and the interlayer 5 with a thickness [of a monolayer] of 30 micrometers was created.

** E-O copolymer : ULTZEX 3550 [trade name by Mitsui Petrochemical Industries, Ltd.] consistency =0.925.

** S-B copolymer : 70 - 90 % of the weight of Asa FREX 810 [trade name by Asahi Chemical Industry Co., Ltd.] styrene, 30 - 10 % of the weight of butadienes.

** S-B copolymer water garnish : 20 - 50 % of the weight of tough tech H1041 [trade name by Asahi Chemical Industry Co., Ltd.] styrene, 80 - 50 % of the weight of butadienes.

** HIPS : Styron 475D [trade name by Asahi Chemical Industry Co., Ltd.].

Subsequently, by gravure reverse, it dissolved in the solvent, the following [constituent 2 for heat sealant layers] was applied to the above-mentioned middle class 5, the heat sealant layer 6 was formed by the thickness of 2 micrometers (solid content), and the samples 31-46 and the comparison samples 31-36 of an example which are shown in Table 5 were created.

Constituent 2for [heat sealant layers]

- Polyurethane NIPPORAN 5120 The 30.0 weight sections " trade name by Japan polyurethane industrial incorporated company"

- A vinyl chloride and vinyl acetate system copolymer Vinylite VAGH The 7.5 weight sections "Union Carbide trade name"

- Conductive particle T-1 The 62.5 weight sections " trade name by MITSUBISHI MATERIALS CORP."

[0056]

[Table 5]

表 5 実験例 2 の中間層の構成

試 料 番 号	中間層の熱可塑性樹脂層の構成			
	E・O 共重合体	S・B 共重合体	S・B 水添物	HIPS
実 施 例 31	1 2	8 8	—	—
32	1 2	8 0	8	—
33	1 2	8 0	—	8
34	4 0	6 0	—	—
35	4 0	5 0	5	5
36	4 0	4 2	2 8	—
37	4 0	4 2	—	2 8
38	4 0	1 0	2 5	2 5
39	8 8	1 2	—	—
40	8 8	—	1 2	—
41	4 0	6 0	—	—
42	4 0	6 0	—	—
43	4 0	6 0	—	—
44	4 0	6 0	—	—
45	4 0	6 0	—	—
46	4 0	6 0	—	—
比 較 試 料 31	5	9 5	—	—
32	9 5	5	—	—
33	3 3	3 2	3 5	—
34	4 0	5	—	5 5
35	4 0	6 0	—	—
36	4 0	6 0	—	—

但し

E・O 共重合体：エチレン・ α オレフィン共重合体

S・B 水添物：S・B 共重合体水添物

比較試料 33 はブロッキングを発生し、取扱いが困難で実用性に乏しい。

[0057] Although heat sealed with the conductive polyvinyl chloride base material XEG47 " trade name made from a peace chemistry incorporated company stock" as a result of measuring surface resistivity and the charge damping time by the following approach about each above-mentioned covering tape (the samples 31-46 and the comparison samples 31-36 of an example), peel strength and an exfoliation gestalt are shown in the property of the example 2 of table 6 experiment.

- Surface resistivity : measure on the conditions 22 degrees C and whose relative humidity are 40% using Huy Lester IP " trade name by Mitsubishi Chemical, Inc."

- Charge damping time : STATIC DECRY 23**5 degrees C and relative humidity measure the time amount which 5000V to 99% of attenuation takes on the conditions which are 12**3% based on MIL-B-81705C using METER-406C "Electro-Tech Systems and trade name made from Inc."

- peel strength: -- the following conditions -- heat sealing -- tensilon universal testing machine HTH-measure peel strength for exfoliation and an exfoliation rate by 300 mm/min 180 degrees using 100 "an Oriental Baldwin, Inc. trade name."

[The extraction approach of a sample]

Seal conditions : Let 25 shots (200mm) be a sample after seal head:width 0.5mmx2, die length of 16mm, delivery die length of 8mm, and extraction sample:50-shot (400mm) extraction for the temperature of 150 degrees C, the 2.0 kgf/cm pressure 2, and time amount 0.5 seconds.

[0058]

[Table 6]

表 6 実験例 2 の特性

但し、> : 測定不能

層間剥離：ヒートシーラント層と中間層との間で剥離

発生原因：ヒートシーラント層の内部破壊による影響

界面剥離：ヒートシーラント層と被着体との間で剥離

[0059] The covering tape of this invention can fully carry out the heating seal of a heat sealant layer and the carrier tape, and can exfoliate between an interlayer and a heat sealant layer. About exfoliation actuation of the covering tape 1 shown in drawing 1, drawing 4 R>4 - drawing 6 are made reference, and are explained. The heat-sealing section 10 of the shape of Rhine which has shown the covering tape 1 shown in the carrier tape 11 which formed the pocket section 12 at drawing 4 to the both ends in the slash section with predetermined width is formed. The heat-sealing reinforcement of the heat sealant layer 6 of the covering tape 1 and the carrier tape 11 is 10 - 80g/1mm width in this condition. Subsequently, if the covering tape 1 is exfoliated from the carrier tape 11, in the Rhine-like heat-sealing section 10, it will exfoliate between an interlayer 5 and the heat sealant layer 6. That is, both the covering tapes of this invention have the opposite engine performance in which it can exfoliate easily, when also exfoliating high heat-sealing nature suddenly to the carrier tape 11. moreover, thicken the adhesives layer which pastes up a biaxially oriented film and an interlayer, or It is chewiness (the stability at the time of making a film etc. crooked is meant) by making high the ratio of the curing agent in an adhesives layer component, or preparing an interlayer. what the stability is estimated that the waist is [a larger thing] stronger by -- it is -- it is strong and a zip rise can be made small with the peel strength which the interlayer got ** which also does so the cushion effect at the time of heat sealing, and was stabilized.

[0060]

[Effect of the Invention] The covering tape which pasted together and formed an axial oriented film and the middle class with hardening mold adhesives The heat sealant layer prepared for the interlayer formed with three or more sorts of resin which a zip rise lessens when exfoliating, and contains an E-O copolymer and a S-B copolymer at least among an E-O copolymer, a S-B copolymer, a S-B copolymer water garnish, and HIPS When exfoliating with a carrier tape, the effectiveness of stabilizing and exfoliating between an interlayer and a heat sealant layer is done so.

[Translation done.]

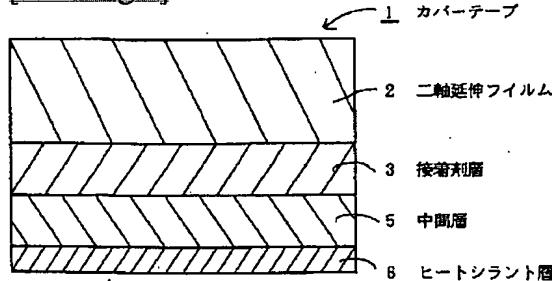
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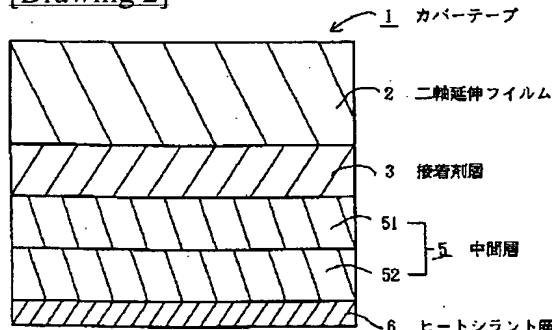
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DRAWINGS

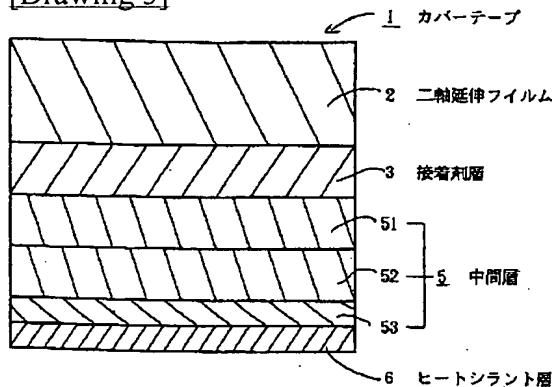
[Drawing 1]



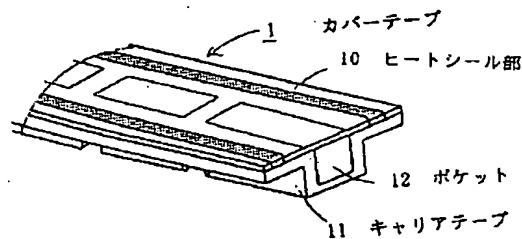
[Drawing 2]



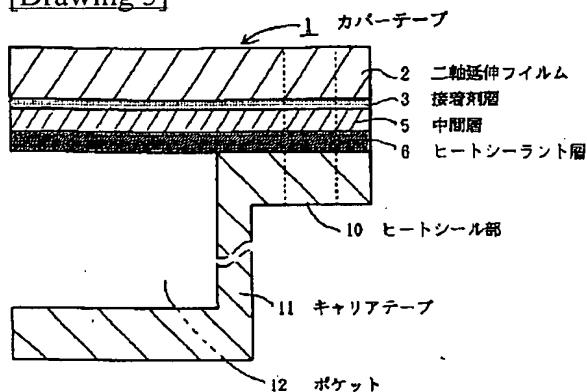
[Drawing 3]



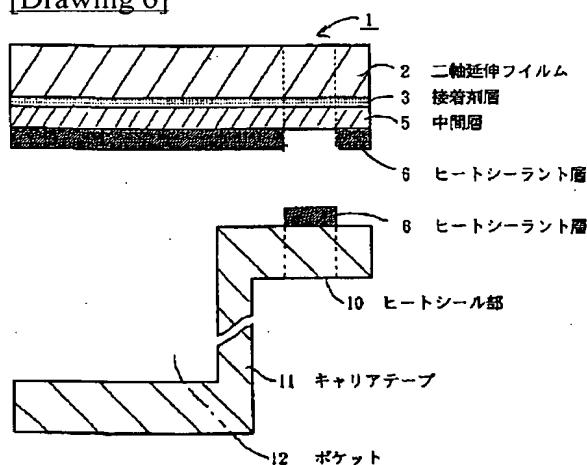
[Drawing 4]



[Drawing 5]



[Drawing 6]



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CORRECTION OR AMENDMENT

[Kind of official gazette] Printing of amendment by the convention of 2 of Article 17 of Patent Law

[Section partition] The 4th partition of the 2nd section

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B32B 27/00	D
B32B 27/00	104
B32B 7/12	
B32B 9/00	A
B32B 27/18	J
B32B 27/18	D
B32B 27/28	101
B32B 27/30	A

[Procedure revision]

[Filing Date] January 23, Heisei 16 (2004. 1.23)

[Procedure amendment 1]

[Document to be Amended] Specification

[Item(s) to be Amended] Claim

[Method of Amendment] Modification

[The contents of amendment]

[Claim(s)]

[Claim 1]

In the covering tape which can be heat sealed on a carrier tape this covering tape A biaxially oriented film, The laminating of the heat SHIRANTO layer containing the conductive particle of an adhesives layer, the middle class and a tin oxide system, a zinc oxide system, and an indium oxide system or an antistatic mold silicon organic compound is carried out to order. And the initial impact resistance values by the loop-formation stiffness circuit tester method are 4-50g, and the stiffness reinforcement f (a unit is a gram) and relation with time amount t (a unit is a part) set to the relational expression of $f = -at + b$ (for a and b, a constant and t are a variable). The covering tape characterized by being what satisfies $0 \leq a \leq 0.5$ and $4 \leq b \leq 50$.

[Claim 2]

The covering tape characterized by the difference of the upper limit of the reinforcement when carrying out

the laminating of the heat SHIRANTO layer in which this covering tape contains the conductive particle of a biaxially oriented film, an adhesives layer, the middle class and a tin oxide system, a zinc oxide system, and an indium oxide system or an antistatic mold silicon organic compound to order in the covering tape which can be heat sealed on a carrier tape, and exfoliating after heat sealing the above-mentioned covering tape and a carrier tape, and a lower limit being 30g or less.

[Claim 3]

The covering tape according to claim 1 characterized by the difference of the upper limit of the reinforcement when exfoliating and a lower limit being 30g or less after heat sealing the above-mentioned covering tape and a carrier tape.

[Procedure amendment 2]

[Document to be Amended] Specification

[Item(s) to be Amended] 0003

[Method of Amendment] Modification

[The contents of amendment]

[0003]

[Means for Solving the Problem]

In order to solve the above-mentioned technical problem, in the covering tape which can be heat sealed on the carrier tape of this invention, it is the covering tape which compounded in order the heat SHIRANTO layer in which this covering tape contains the conductive particle of a biaxially oriented film, an adhesives layer, the middle class and a tin oxide system, a zinc oxide system, and an indium oxide system, or an antistatic mold silicon organic compound.

And the initial impact resistance values by the loop-formation stiffness circuit tester method of said covering tape are 4-50g, and the stiffness reinforcement f (a unit is a gram) and relation with time amount t (a unit is a part) satisfy $0 <= a <= 0.5$ and $4 <= b <= 50$ in the relational expression of $f = -at + b$ (for a and b, a constant and t are a variable). Furthermore, the zip rise when exfoliating is 30g or less after heat sealing said covering tape and carrier tape.

[Procedure amendment 3]

[Document to be Amended] Specification

[Item(s) to be Amended] 0007

[Method of Amendment] Modification

[The contents of amendment]

[0007]

However, the conductive carbon black particle as an antistatic agent contained in an above-mentioned carrier tape and an above-mentioned covering tape and the metal particle reduced the transparency of a sheet, and had the problem of being hard to check the electronic parts contained from the outside. Moreover, when a surfactant was applied, the antistatic nature of a surfactant had a humidity dependency, does not have antistatic effectiveness sufficient in the ambient atmosphere of low humidity, and had the trouble of destroying electronic parts.

[Procedure amendment 4]

[Document to be Amended] Specification

[Item(s) to be Amended] 0060

[Method of Amendment] Modification

[The contents of amendment]

[0060]

[Effect of the Invention]

The covering tape which pasted together and formed a NI shaft oriented film and the middle class with hardening mold adhesives The initial impact resistance value by the loop-formation stiffness circuit tester method sets to 4-50g, and the stiffness reinforcement f (a unit is a gram) and relation with time amount t (a unit is a part) set to the relational expression of $f = -at + b$ (for a and b, a constant and t are a variable).

$0 <= a <= 0.5$ and $4 <= b <= 50$ -- ** -- after heat sealing the above-mentioned covering tape and a carrier tape by carrying out The difference of the upper limit of the reinforcement when exfoliating and a lower limit can set to 30g or less, there are few zip rises, and the heat sealant layer prepared for the interlayer does so the effectiveness of stabilizing and exfoliating between an interlayer and a heat sealant layer, when exfoliating with a carrier tape.

[Translation done.]